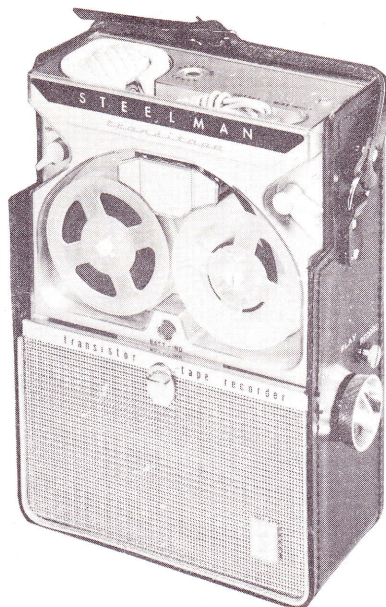


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STEELMAN MODEL
Transitape 2-7111STEELMAN MODEL
Transitape 2-7111

GENERAL INFORMATION

The Steelman Transitape Model 2-7111 is a dual-track, transistorized, battery operated portable tape recorder.

The unit uses standard 3" reels and standard one-quarter inch magnetic tape.

The chart below indicates the playing time when various types of tape are used.

TAPE FOOTAGE AND TIME CHART

Type of Tape	Tape Length In Feet	Single Track		Two Track	
		1 7/8 IPS	3 3/4 IPS	1 7/8 IPS	3 3/4 IPS
1 1/2 Mil Regular	150	16 Min.	8 Min.	32 Min.	16 Min.
1 Mil Extra Play	225	24 Min.	12 Min.	48 Min.	24 Min.
1/2 Mil Double Play	300	32 Min.	16 Min.	64 Min.	32 Min.

Manufactured By:

Steelman Phono & Radio Co.
2-30 Anderson Ave.
Mount Vernon, N. Y.

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA
C408

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STEELMAN MODEL
Transitape 2-7111

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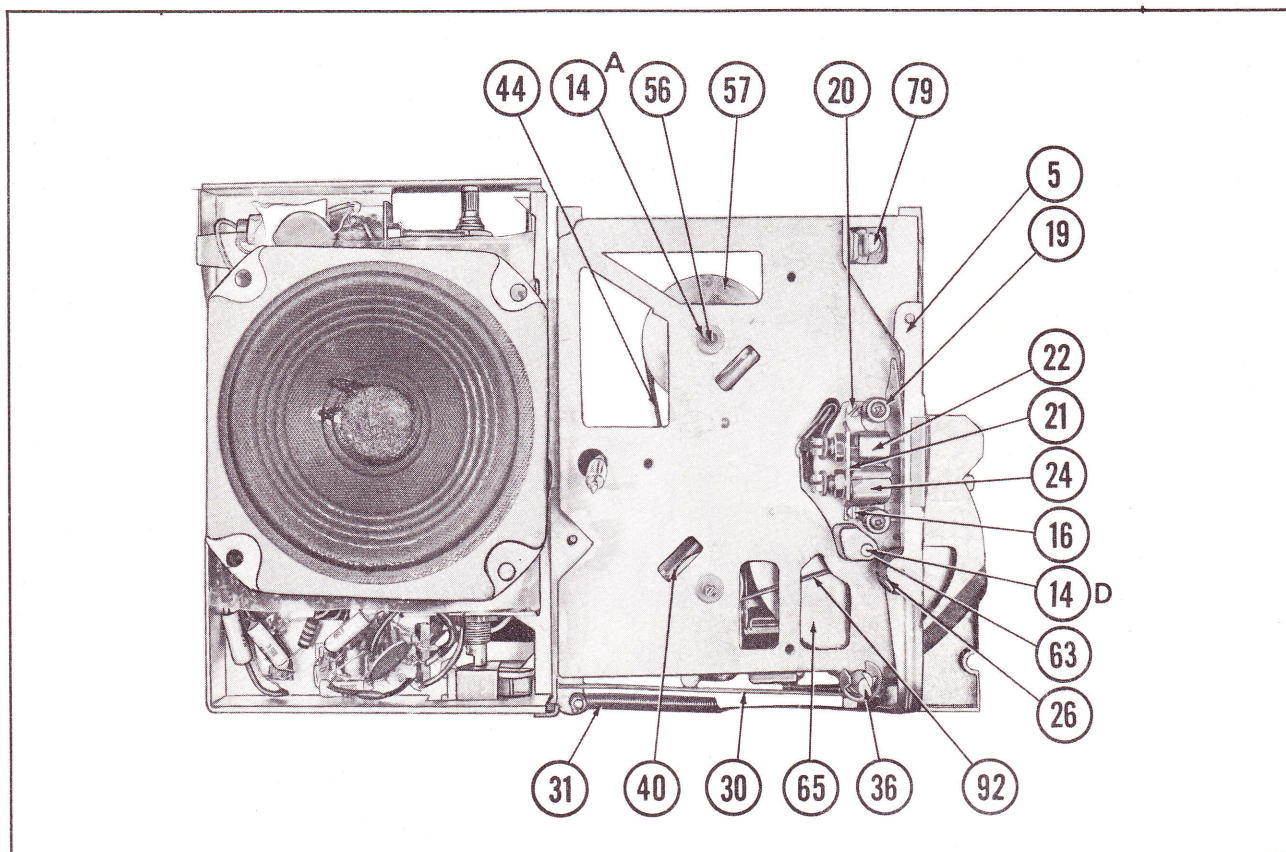


Figure 1. Recorder With Case and Covers Removed.

SPECIFICATIONS

Size:

6 1/2" x 9 3/4" x 2 7/8"

Functions:

Records from a microphone or other high-impedance source while automatically erasing the previously recorded material. Plays back through a built-in speaker. A jack is provided for an external speaker or for earphones.

Microphone:

Crystal, high-impedance type.

Heads (2):

Record-playback; half-track.
Erase; half-track.

Semiconductors:

Seven transistors -- all RCA 2N405 or equivalent.
Two diodes -- CBS 1N48G or equivalent.

Speaker:

4-inch PM dynamic; 3.2-ohm impedance.

Frequency Response:

100-6,000 cps at 3 3/4 ips.
100-4,000 cps at 1 7/8 ips.

Power Output:

100 milliwatts

Power Supply:

13 cells, Mallory RM-12R. Amplifier requires 6 cells for an 8.0-volt power source (approximate life, 200 hours). Motor requires 7 cells for 9.4-volt power source (approximate life, 50 hours). The Transitate may be operated on 220/110 volts AC by using Power Source Adapter No. 2-7155. A 12-volt automobile or boat battery source may be substituted for the motor cells only, by using Battery Adapter Cable No. 2-7156.

Power Consumption:

Motor battery (play and record) -- 50-80 ma.
Amplifier (playback, no signal) -- 20 ma.
Amplifier (record, no signal) -- 50 ma.

Tape Travel:

Record and playback speeds -- 3 3/4 and 1 7/8 ips.
Starting time -- less than 0.5 second to full speed.
Stopping time -- less than 1.0 second.
Fast forward -- winds a 150-foot tape in less than 2 minutes.
Rewind -- rewinds a 150-foot tape in less than 1 minute.

Battery-Level Indicator:

Neon lamp, NE #2 (motor cells only).

Record-Playback Level Indicator:

Neon lamp, NE #2

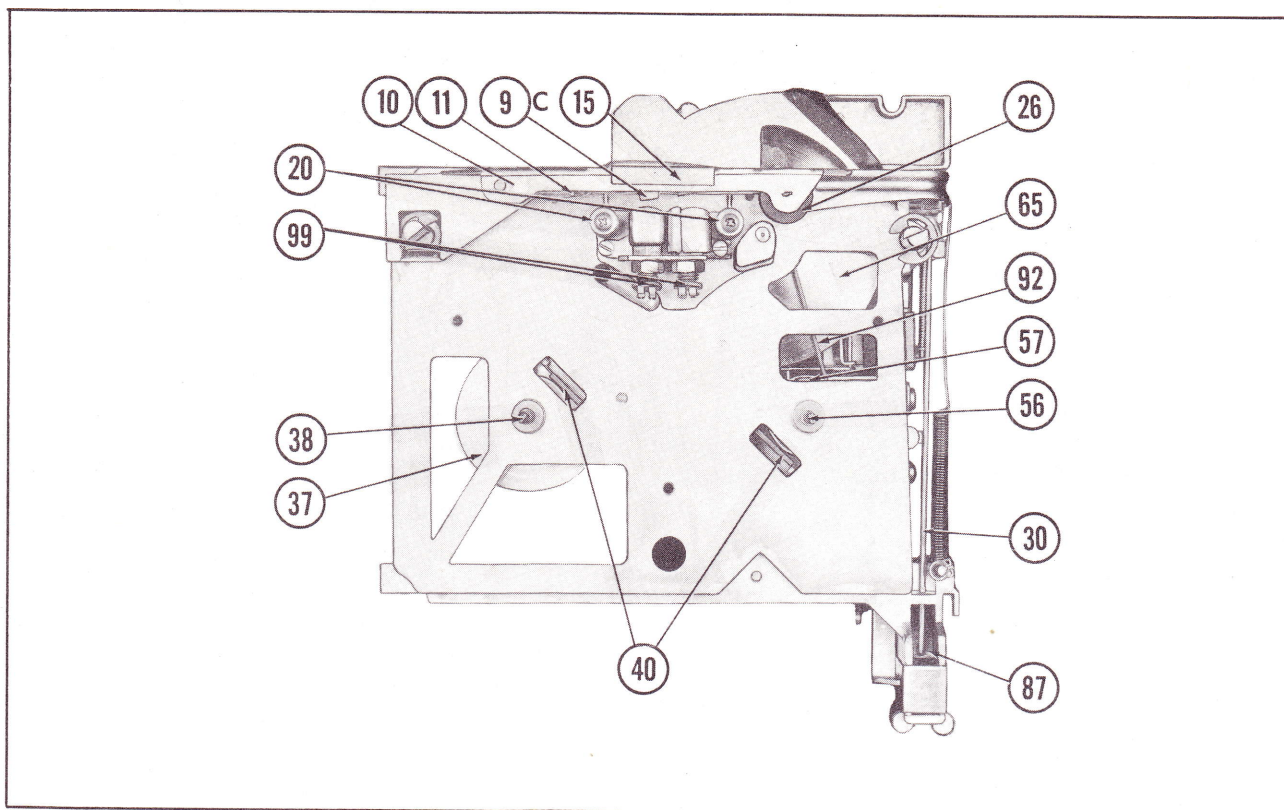


Figure 2. Transport Mechanism – Front View.

FUNCTIONS OF CONTROLS, INDICATORS, and SWITCHES

Function Control

The Function control regulates both the electrical and the mechanical operations of the recorder in each of the three positions: Off (extreme counterclockwise), Play, and Record.

In Off position, the Function control removes the power from the amplifier and motor. (The motor will still run, however, if the Fast Forward-Rewind control is not in Normal position.) Cam (28), holding up pressure arm (5) by means of pressure release rod (30), keeps pressure roller (26) away from capstan shaft (63), and pressure pads (9C) away from erase (22) and record (24) heads. Pressure roller (26) and pressure pads (9C) are mounted on pressure arm (5).

Play position is for listening to recordings. As the Function control is turned, its shaft moves cam (28), which allows pressure release rod (30) to drop. Further motion of cam (28) is blocked by a tab on record push-button arm (85), which prevents unintentional setting of the Function control to Record. Pressure arm spring (31) can now pull down pressure arm (5). As a result, pressure roller (26) pushes the tape against capstan shaft (63). This action pulls the tape across erase head (22) and record-playback head (24). The movement of pressure arm (5) causes pressure pads (9C) to bear on heads (22) and (24). This may be adjusted (see "Pressure Pads" under "Adjustments").

The Record push button must be depressed when the Function control is set to Record. This action moves record push-button arm (85), which permits cam (28) to move and the Function control shaft to turn. There is no further mechanical action as the Function control is moved from Play to Record position.

Fast Forward-Rewind Control

The Fast Forward-Rewind control regulates the tape drive mechanism. Normal position is for playback and record; Fast, for advancing the tape rapidly from the supply reel to the take-up reel; and Rewind, for returning the tape to the supply reel. This control activates the motor in the Fast and Rewind positions, even though the Function control may be turned off.

Mechanically, the Fast Forward-Rewind control acts in four ways:

- a. If the Function control is in the Play or Record position, moving the Fast Forward-Rewind control from Normal position will move pressure arm (5). This action moves pressure roller (26) away from capstan shaft (63), and pressure pads (9C) away from record head (24) and erase head (22). Movement of the pressure arm (5) is accomplished by the flat side of rewind shaft (36) bearing on the sides of the square opening in the left end of pressure arm (5). If the Function control is in Off position, pressure arm (5) will already have rotated, so that moving the Fast Forward-Rewind control will have no effect.
- b. If the Fast Forward-Rewind control is in Normal position, torque is applied from fly-wheel pulley (64) to take-up pulley (57) by springbelt (92). There is only enough tension on springbelt (92) to take up the tape as it is fed by pressure roller (26) and capstan shaft (63). In Fast Forward position, tightener pulley (58) on spring belt tightener arm (93), which is part of slide bar (35), moves and increases the tension on spring belt (92). As

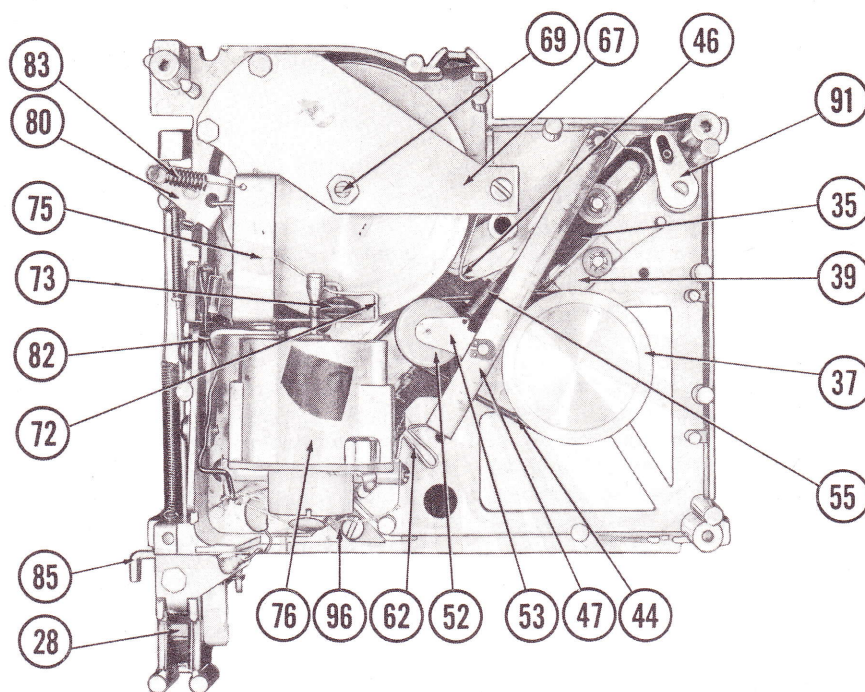


Figure 3. Transport Mechanism — Back View.

a result, take-up pulley (57) is driven with sufficient force to wind the tape. In Rewind position, the movement of slide bar (35) in the opposite direction releases the tension on spring belt (92). In addition, a stud on slide bar (35) releases the pressure on rewind yoke (53). Because of this action, rewind yoke spring (55) brings rewind idler pulley (52) into contact with flywheel (65). The revolving of rewind idler pulley (52) is transmitted by rewind belt (44) to rewind pulley (37), rewinding tape from take-up spool.

- c. A slight movement of slide bar (35) from Normal position causes drive brakes (39) to press on rewind pulley (37) and take-up pulley (57) through brake linings (40). When the Function control is moved toward Fast position only, flywheel brake (46) contacts flywheel (65). Further motion removes the brake pressure. Detent spring (62) holds slide bar (35) in position when the slide bar has been moved into Fast or Rewind positions.
- d. Movement of slide bar (35) from Normal position causes tab (35A) to contact rewind switch contact (95), closing motor circuit and activating motor (76).

Speed Selector Control

When the Speed Selector control is turned, speed change arm (80) rotates, speed change slide bracket (89) slides on slide bracket shaft (90), and idler roller (73) changes its point of contact with motor pulley (76) and flywheel (65). Speed change arm spring (83) holds speed change arm (80) in its set position. Slide bracket spring (75) keeps idler roller (73) in contact with motor pulley (76) and flywheel (65). In the 1 7/8-

ips position, idler roller (73) transfers torque from the small-diameter portion of motor pulley (76) to a point near the edge of flywheel (65). In the 3 3/4-ips position, idler roller (73) works from the large-diameter portion of motor pulley (76) to a point nearer the center of flywheel (65). On some units, a tab on speed change arm (80) opens or closes tape speed switch (M9) and thus changes the resistance in the motor circuit as the tape speed is varied.

Volume Control

The Volume control adjusts the volume during record and playback. It has no mechanical function.

Battery Level Indicator

Glowes when recorder is operating if motor batteries have adequate strength. When indicator goes out or fails to light while recorder is being used, replace motor batteries. This light does not indicate the condition of the amplifier batteries.

Recording Level Indicator

Volume control is adjusted during a recording so that recording level indicator flashes at medium brilliance during loud passages.

Remote-Control and Auxiliary Power Jack and Switch

Normal position is used for operating from self-contained batteries. Switch is in Auxiliary position when the following accessories are plugged into jack: (1) Hand Switch, Remote Control No. 2-7151; (2) Floor Switch, Remote Control No. 2-7152; (3) 220/110-volt AC, Power Source Adapter No. 2-7155; or (4) 12-volt DC, Car Battery Adapter Cable No. 2-7156. Refer to instructions with accessories for proper use.

Mike Input Jack

For high-impedance source, such as crystal or ceramic microphone, record player cartridge, tape recorder head, tuner output, etc.

Output Jack

For connecting external speaker or earphones. Built-in speaker is disconnected when this jack is used. Accompanying microphone may be used as earphone during playback by plugging it into output jack.

OPERATING INSTRUCTIONS

To Thread Tape

Put supply reel on left spindle and empty spool on right spindle. Lay tape in slot with shiny side upward. Wrap a few turns of tape on take-up spool to secure tape.

To Record With Microphone

Insert microphone into Mike input Jack. Set Speed Selector control at desired tape speed. Depress Safety Interlock button and turn Function control to Record. Adjust Volume control so recording level indicator lights up during loud passages. No warm-up is required. Turn Function knob to Off position at end of recording.

Since the Transita Model 2-7111 is a dual-track machine, only the lower half of the tape is used during recording. After the entire reel is recorded, the full take-up reel is turned over and placed on the supply spindle, and a new recording can be made. Thus, the amount that can be recorded on a length of tape is doubled.

To Rewind Tape

With Function control in Off position, set Fast Forward-Rewind control to Rewind. When desired point is reached, return control to Normal position. Fast position is similarly used to move tape rapidly in the opposite direction.

To Play Tape

Thread tape as instructed under "To Thread Tape." Set Speed Selector control to speed at which tape was recorded. Fast Forward-Rewind Control is set to Normal position. Turn Function control to Play. Adjust Volume control.

To Edit and Splice Tape

Since one track cannot be spliced without affecting the other, recordings to be edited should be limited to one track. Unwanted portions can be cut out with scissors and the desired selections joined together. Tape should be cut at a slight diagonal and the ends joined with splicing tape on the glossy side. Excess splicing tape should be trimmed from side of recording tape.

NOTE: Use splicing tape only. Do not use regular cellophane tape.

DISASSEMBLY INSTRUCTIONS

To Install Cells

1. Remove the leather case top.
2. Pull off the Volume and Function knobs. Unscrew the Safety Interlock button.
3. Lift the entire mechanism straight up and out of the case.
4. Insert 13 cells in the clips on the back of the case. Observe the polarity.
5. To reassemble, reverse this procedure.

For Access To Amplifier Chassis

1. Follow procedure under "To Install Cells."
2. Remove the back cover (cell holder) to expose the transistor side of the amplifier chassis.
3. Remove the speaker to expose the wiring side of the chassis. To remove the speaker, unscrew the two Phillips head 6-32 speaker mounting screws and remove the tape, clips, and front speaker guard.
4. To reassemble, reverse this procedure.

ADJUSTMENTS

To Align Heads

While playing a prerecorded frequency-alignment tape on the recorder, loosen screw (16) holding head mounting bracket (21) to base (14). Adjust screw (18) for maximum volume.

Flywheel Bearings

Adjustable jewel bearing (69) may be tightened or loosened after bearing lock nut (70) is released. The adjustment is proper when flywheel (65) rotates freely without end play. Be sure to tighten bearing lock nut (70) after adjustment is made.

Speed

Tape speed may be adjusted by bending the stop tabs on speed change arm (80). For 3 3/4-ips tape travel, idler roller (73) rides one inch from the center of flywheel (65); for 1 7/8 ips, idler roller (73) rides 1 1/4 inch from the center of flywheel (65).

Pressure Pads

Pressure pads (9C) are adjusted for maximum volume on tape playback. Too great a pressure will cause wow and other distortion. To adjust, loosen screw (10) and move pressure pad adjuster arm (11). Moving arm (11) toward top of machine increases pressure, and vice versa.

Motor Height

The end of the motor pulley must be 15/32 inch from the flywheel to prevent slippage between motor pulley (76), idler roller (73), and flywheel (65). Motor bracket (82-761161) is adjusted by turning motor bracket adjusting screw (102). Motor bracket (82-761081) is adjusted by varying the tension on screws (101).

LUBRICATION

The Steelman Transitaape Model 7111 uses jeweled and oilite bearings, which require no lubrication during normal operation. When machine is disassembled,

grease sliding parts and put a drop of light machine oil on bearings.

CLEANING

Any accumulation of foreign matter on heads or on other parts contacting the tape will affect the quality and volume of reproduction. This foreign matter can be removed with a soft cloth moistened with ethyl

alcohol. Carbon tetrachloride can be used, but is not recommended because of possible detrimental effect on mechanical parts and toxic effect on the user.

ELECTRONIC THEORY and OPERATION

Record

The signal from a crystal microphone connected to M14, is fed through section 2-rear of M7 and through C10 into the base of X1. The input impedance of X1, 100K ohms, loads the microphone and provides a rising high-frequency characteristic. Negative feedback of the high and midrange frequencies from X2 through C11 and R5 provides bass boost. The emitter-follower circuit of X1 is coupled to X2 through C4. X2 uses a grounded emitter for high gain. The signal from the collector of X2 goes to the slider of R1 through C6, and then through C7 to the base of X3. The driver stage (X3) is transformer-coupled (T1) to X4 and X5 for push-pull output. Voltage divider R18 and R19 provides bias for the base of X3; voltage divider R23 and R22 provide the bias for the base of X4 and X5. Capacitor C12, across the primary of T2, prevents high-frequency oscillation and also produces a slight high-frequency rise due to resonance.

Transformer T2 has two secondary windings: one, a low-impedance winding, has R26 for a load and also supplies feedback circuit C13, R25, C14, and R20. Capacitor C13 provides a low bass boost by feeding back the middle and high frequencies; C14 shunts the high frequencies to ground and thus prevents the loss of highs by negative feedback.

The high-impedance winding of T2 feeds two separate circuits. Through R17 the audio signal is fed to a symmetrical full-wave doubler circuit M3, M4, C19, and C20. Rectifier M3 charges C19 to the positive signal peak, and M4 charges C20 to the negative peak. The peak-to-peak signal causes M5 to fire, indicating the recording level. This circuit causes a minimum distortion to the audio signal and yet absorbs the transient peaks.

The signal from the high-impedance winding of T2 also goes through R16 and section 3-rear of M7 to recording head M12. The low side of this winding goes to B- instead of to ground. As a result, DC current flows through M12 to counteract the effects of the DC erase on the recording tape.

Transistors X6 and X7 operate as a push-pull oscillator whose output (25 to 30 kc) provides RF bias for recording. Oscillator coil L1 has an adjustable ferrite slug for frequency regulation. Bias signal is fed from the secondary winding of L1 through C18,

where the signal mixes with the audio signal on the way to M12.

Collector current for X6 and X7 flowing through M13 provides DC erase for the tape recorder.

Play

When the unit is in Play position, the signal from record-playback head M12 is fed through section 3-rear and section 2-rear of M7 to the base of X1. From there, the signal path is the same as in the Record position, except for the following differences. Feedback circuit C11 and R5 is now grounded through section 2-rear of M7. The signal from the high-impedance secondary winding of T2 through R16 is now grounded by section 3-rear of M7. (The signal through R17 still operates M5.) The low-impedance secondary winding of T2 now feeds M15 and SP1 through section 1-front of M7. (R26 is out of the circuit.) The feedback network of C17, R25, C14, and R20 continues to function. When jack M15 is used, SP1 is disconnected.

When the unit is in Playback position, erase head M13 and the oscillator circuit are disabled by opening the B- line at section 3-front of M7.

Power Supply

Two separate sets of cells provide long battery life and low noise. The positive ends of both batteries are disconnected from the ground by section 2-front of M7 when the unit is in the Off position. In some units, section 1-rear of M7 connects the negative end of M1 to the positive end of M2 when the unit is in Off position, so that their combined voltages are available for rewind and fast forward. In later production units section 1-rear of M7 is not used, and just the motor battery provides power for this operation. Moving function switch M7 to Play or Record position grounds the B+ of both batteries through section 2-front of M7 and thus completes the motor and amplifier power circuits.

When M11 is running on good cells, its speed is held down to the required 3,100-3,300 rpm by an internal governor, which rapidly breaks the motor current. These pulses are stepped up by T3 and light indicator M6. When the cells are weak, the motor governor no longer opens; therefore, no pulses are generated to light M6. Thus, failure of M6 to light is a reliable indication of weak motor cells.

TROUBLE CHART

NOTE: Batteries should be checked first in all cases of defective operation, since a deficient power supply may produce varied and confusing symptoms. The following assumes good batteries, properly installed.

Symptom	Possible Cause	Remedy
Recorder fails to operate.	1. Remote-control switch in Auxiliary position.	1. Move switch to Normal position.
Tape fails to move in Play and Record positions; motor does not run.	1. Broken leads from battery to motor (76). 2. Defective motor (76).	1. Check for open circuit with an ohmmeter. 2. Replace motor (76).
Motor runs; capstan shaft (63) fails to turn.	1. Motor height adjustment incorrect. 2. Idler roller (73) binds. 3. Idler roller (73) worn or defective. 4. Flywheel(65) dirty or oily. 5. Capstan shaft (63) binds.	1. Adjust motor height. See "Motor Height" under "Adjustments". 2. Straighten drive idler yoke (72) if bent. Lubricate idler roller shaft (71). 3. Replace idler roller (73). 4. Clean flywheel (65) with alcohol. (See "Cleaning.") 5. Adjust or replace jewel bearings (69) and (14D).
Capstan shaft (63) turns; take-up reel fails to function.	1. Spring belt (92) broken, weak, or missing. 2. Take-up shaft (56) binds. 3. Tightener pulleys(58)bind	1. Replace spring belt (92). (See Fig. 7.) 2. Clean and lubricate take-up shaft (56). 3. Loosen grip rings (60) to permit free movement.
Capstan shaft (63) turns; tape fails to move.	1. Supply spindle shaft (38) binds. 2. Pressure roller (26) worn or dirty.	1. Clean and lightly lubricate supply spindle shaft (38). 2. Clean pressure roller (26) with alcohol if dirty; replace if worn.
Pressure roller (26) fails to move against capstan shaft (63) in Play and Record positions.	1. Pressure arm spring (31) missing or broken. 2. Insufficient pressure roller force (26).	1. Replace pressure arm spring (31). 2. Adjust pressure arm assembly.
Pressure roller (26) fails to move away from capstan shaft (63) in Off position.	1. Pressure release rod (30) missing, bent, or broken. 2. On-off switch cam (28) missing or inverted.	1. Repair or replace pressure release rod (30). 2. Replace on-off switch cam (28).
Tape fails to move in both Fast Forward and Rewind positions with Function switch in Off position.	1. Broken leads to Fast Forward-Rewind switch (M10) or Function switch (M7). 2. Switch actuating tab (35A) bent or dirty. 3. Broken contacts on rewind switch (95).	1. Check continuity with an ohmmeter. 2. Clean and adjust switch actuating tab (35A). 3. Replace rewind switch (95).

TROUBLE CHART (Continued)

Symptom	Possible Cause	Remedy
Tape fails to rewind only.	1. Rewind belt (44) broken, missing, or off rewind idler pulley (52).	1. Replace rewind belt (44). Check position of belt re-tainer (47).
	2. Edge of flywheel (65) dirty.	2. Clean the edge of flywheel (65) with alcohol.
	3. Switch actuating tab (35A) bent or dirty.	3. Clean and adjust switch actuating tab (35A).
	4. Broken contacts on rewind switch (95).	4. Replace rewind switch (95).
Tape fails to move in Fast Forward position only.	1. Spring belt (92) broken, weak, or missing.	1. Replace spring belt (92). (See Fig. 7.)
	2. Take-up shaft (56) binds.	2. Clean and lubricate take-up shaft (56).
	3. Tightener pulleys (58) bind.	3. Loosen grip rings (60) to permit free movement.
Tape spills.	1. Brake linings (40) worn, missing, or dirty.	1. Replace brake linings (40).
Tape moves; no signal during play-back.	1. No signal on tape.	1. See the following, "Machine Fails to Record or Erase."
	2. Broken connections between amplifier battery and amplifier.	2. Check continuity with an ohmmeter.
	3. Defective contacts on Function switch (M7).	3. Check with an ohmmeter.
	4. Foreign matter on recording head.	4. Clean recording head with alcohol. See "Cleaning."
	5. Pressure pads (9C) or pressure pad spring assembly (9A) and (9B) defective or missing.	5. Replace pressure pads (9C) or pressure pad spring assembly (9A) or (9B).
	6. Pressure pads (9C) not contacting tape.	6. Adjust pressure pad adjusting arm (11). See "Adjustments."
	7. Defective speaker (SP1).	7. Replace speaker (SP1).
	8. Output jack (M15) fails to short when plug is removed.	8. Clean contacts, or replace jack.
	9. Pressure arm spring (31) missing or broken.	9. Replace pressure arm spring (31).
Machine fails to record or erase.	1. Defective microphone assembly.	1. Replace microphone assembly.
	2. Defect in oscillator and/or amplifier circuits.	2. Check voltage and resistance measurements; replace defective components.

STEELMAN MODEL
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FOLDER 12



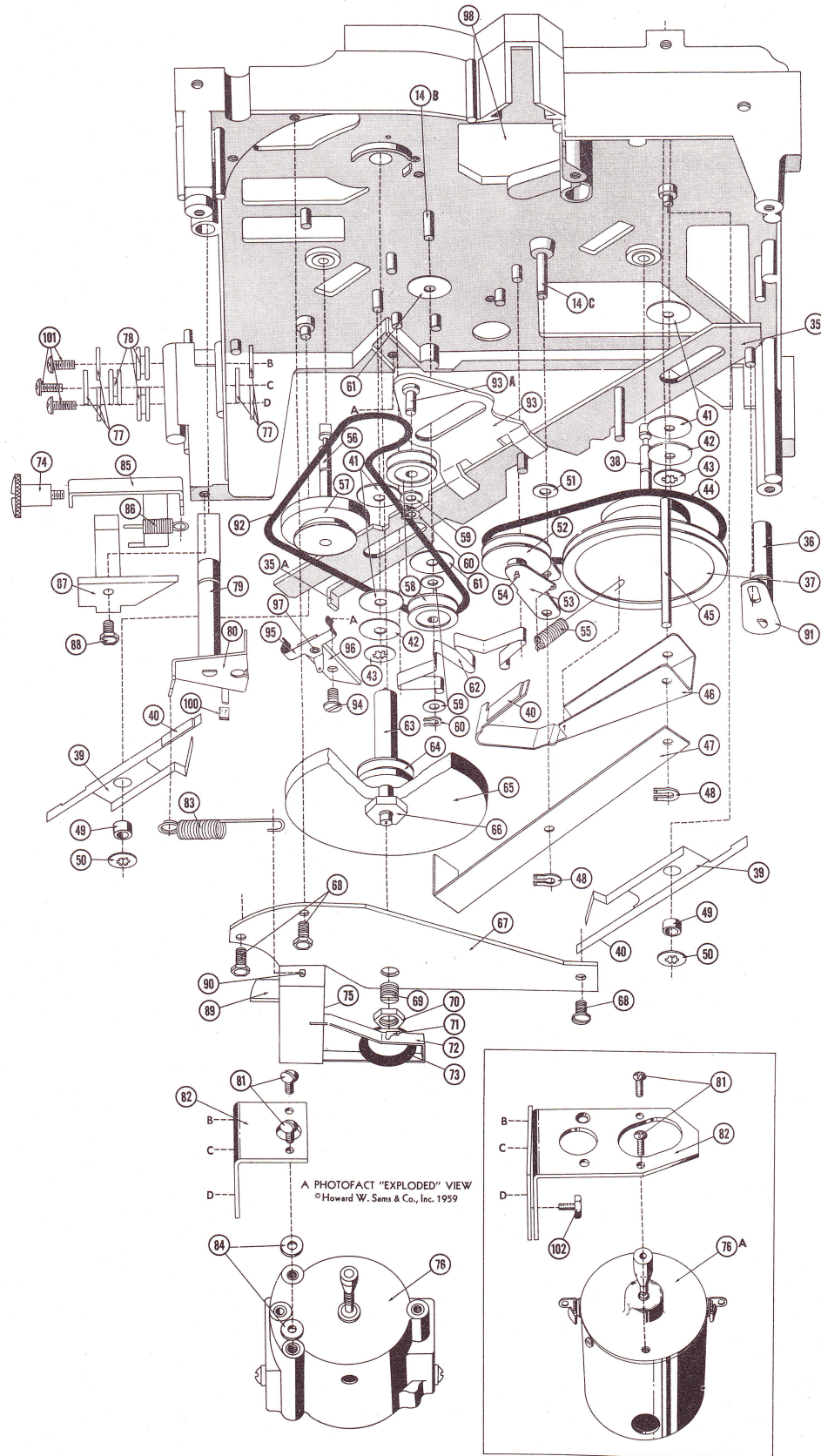


Figure 4B. Exploded View of Parts Behind Base.

TROUBLE CHART (CON'T.)

Symptom	Possible Cause	Remedy
Machine fails to record or erase.	3. Record (22) and erase (24) heads not properly aligned.	3. See "To Align Heads" under "Adjustments."
	4. Foreign matter on recording head.	4. Clean with alcohol. See "Cleaning."
	5. Defective or missing pressure pads (9C) or pressure pad spring assembly (9A) and (9B).	5. Replace pressure pads (9C) or pressure pad spring assembly (9A) and (9B).

Continued on Page 13

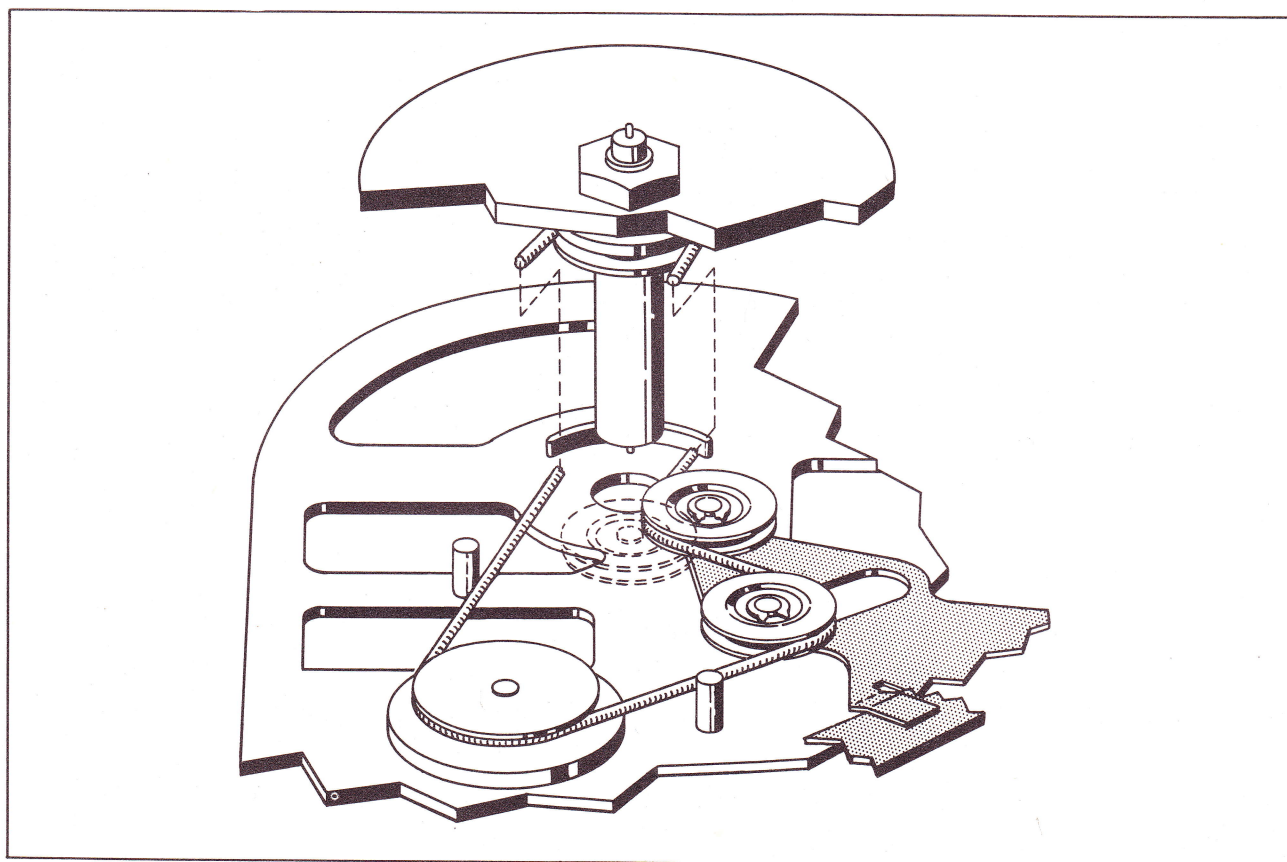


Figure 5. Proper Placing of Spring Belt.

TROUBLE CHART (Continued)

Symptom	Possible Cause	Remedy
Distorted or weak sound, or wow.	1. Idler roller (73) worn or defective	1. Replace idler roller (73).
	2. Flywheel(65)dirty or oily.	2. Clean flywheel (65) with alcohol.(See "Cleaning.")
	3. Capstan shaft (63) binds.	3. Adjust or replace jewel bearings (69) and 14D).
	4. Supply spindle shaft (38) binds.	4. Clean and lightly lubricate supply spindle shaft (33).
	5. Pressure roller (26) worn or dirty.	5. Clean pressure roller (26) with alochol if dirty; replace if worn.
	6. Pressure arm spring (31) missing or broken.	6. Replace prèssure arm spring (31).
	7. Foreign matter on recording head.	7. Clean recording head with alcohol. (See "Cleaning.")
	8. Pressure pads (9C) or pressure pad spring assembly (9A) and (9B) defective or missing.	8. Replace pressure pads (9C) or pressure pad spring assembly (9A) and (9B).
	9. Pressure pads (9C) not contacting tape.	9. Adjust pressure pad adjusting arm (11).
	10. Defect in oscillator and/or amplifier circuits.	10. Check voltage and resistance measurements; replace defective components.

STEELMAN MODEL
Transitape 2-7111

FOLDER 12

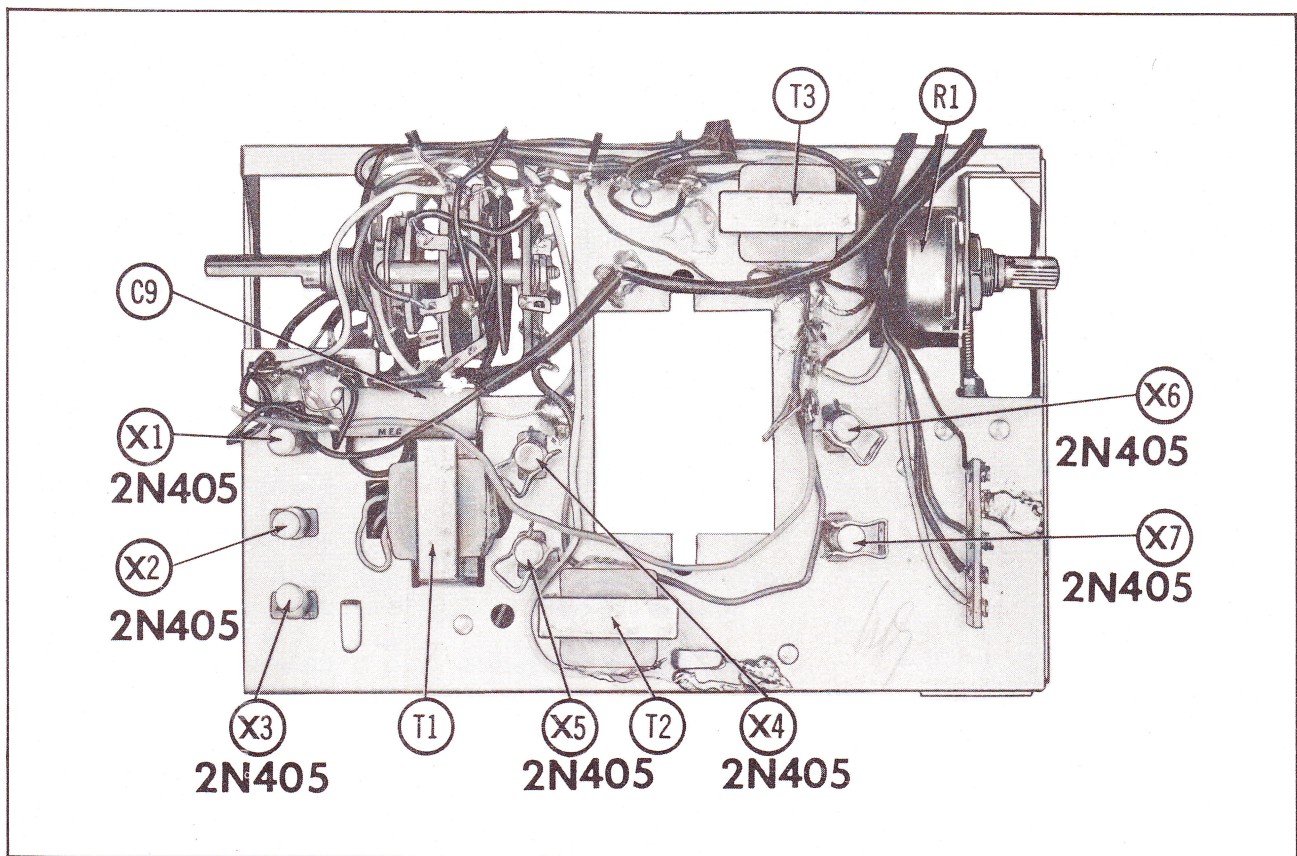


Figure 6. Amplifier Chassis — Back View.

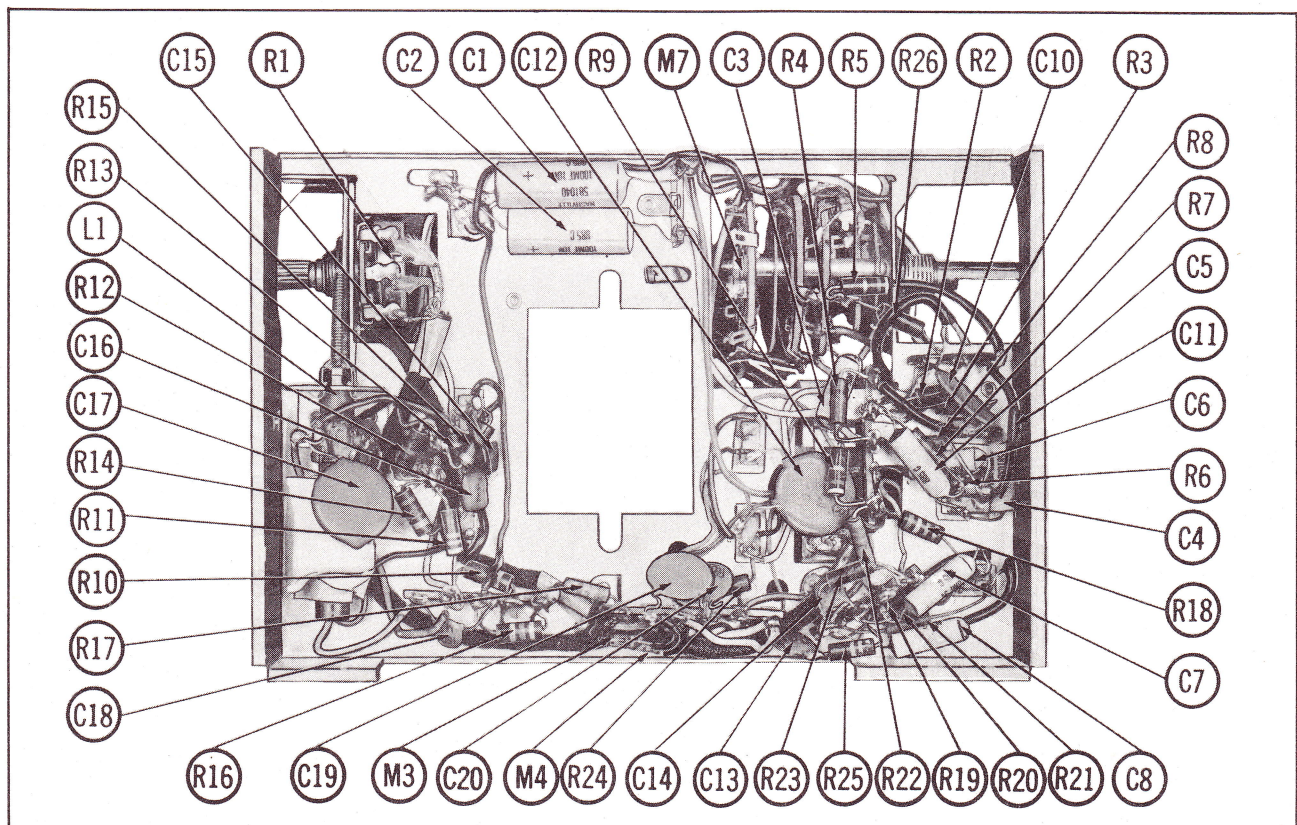


Figure 7. Amplifier Chassis — Front View.

ELECT. PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N405	Preamplifier		2N405	CK-872	2N405	PNP
X2	2N405	AF Amplifier		2N405	CK-872	2N405	PNP
X3	2N405	Driver		2N405	CK-872	2N405	PNP
X4	2N405	Output		2N405	CK-872	2N405	PNP
X5	2N405	Output		2N405	CK-872	2N405	PNP
X6	2N405	Bias Oscillator		2N405	CK-872	2N405	PNP
X7	2N405	Bias Oscillator		2N405	CK-872	2N405	PNP

RESISTORS (cont)

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R11	47K	(4700Ω) *	R17	27K		R23	100Ω	
R12	1000Ω	(220Ω) *	R18	39K		R24	10Ω	
R13	8200Ω	(1000Ω) *	R19	8200Ω		R25	47K	
R14	8200Ω	(1000Ω) *	R20	47K		R26	10Ω	
R15	100Ω	(22Ω) *	R21	1000Ω		R27	15Ω	Note 1
R16	470Ω		R22	2200Ω		R28	39K	Note 2

* Value used in late production.

Note 1. Not used in late production.

Note 2. Not used in early production.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	10	581040	PWE10100	EC100-10	TT15X100	ML100-15	TE-1119.3	
C2	100	10	581040	PWE10100	EC100-10	TT15X100	ML100-15	TE-1119.3	
C3	10	10	581038	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	
C4	10	10	581038	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	
C5	10	5	581041	PWE6010	EC10-6	TT6X10	ML10-6	TE-1087	
C6	10	10	581038	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	
C7	10	5	581041	PWE6010	EC10-6	TT6X10	ML10-6	TE-1087	
C8	10	5	581041	PWE6010	EC10-6	TT6X10	ML10-6	TE-1087	
C9	100	5	581039	PWE6100	EC100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENC0 PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C11	50000		BPD-05	DD-503		CCD-503	GP150	5HK-S50
C12	100000			DDA-104			BT-010	5HK-P10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	2000	(4000mmf) *	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C16	2000	(4000mmf) *	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	150		BPD-00015	DD-151	LI0T15	CCD-151	B-315	5GA-T15
C19	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C20	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

* Value used in late production.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	10K	1/2	368052	B-15	A47-10K-Z	Q13-116	U20	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R2	1meg		R5	4700Ω		R8	15K	
R3	22K		R6	220K		R9	4700Ω	
R4	1000Ω		R7	220Ω		R10	470Ω	Note 1

COILS

ITEM No.	USE	REPLACEMENT DATA					NOTES
		STEELMAN PART No.	Gromer PART No.	Meissner PART No.	Miller PART No.	Ram PART No.	
L1	Bias Oscillator	455083					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	430270						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	
T2	350Ω CT	3-4Ω SEC.2 10.5K	430577						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	10V @ .067A	500Ω Res.		430578						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	4" 4"	PM PM	3-4Ω 3-4Ω	404008 404016 ①	4A1	① Alternate Part Number

BATTERIES

ITEM No.	VOLTAGE	STEELMAN	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			Z		915		M-15F	Six required (Amplifier) Seven required (Motor)
M2	1.5V			Z		M-15F		M-15F	

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

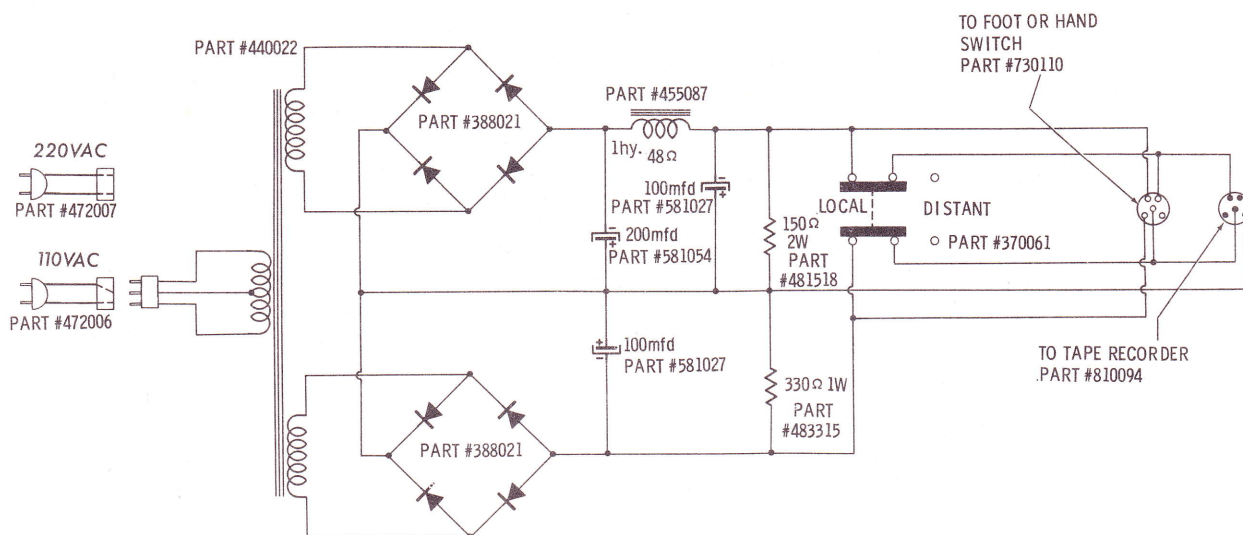
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		STEELMAN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N486	359018	1N60	1N60	1N48	Recording Level Rectifier (Pigtail)
M4	1N486	359018	1N60	1N60	1N48	Recording Level Rectifier (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M5	Record Head	324506	Function (Section 1 rear not used in late production) Remote Control & Auxiliary Power (DPDT Slide Type) Tape Speed (Not used in late production) Fast Forward-Rewind "General Industries" "Barber Coleman"
M6	Erase Head	324507	
M7	Switch	370048	
M8	Switch	370058	
M9	Switch	370058	
M10	Switch	31183	Motor
M11	Motor	31184	
	Microphone	830143	

WIRING DATA

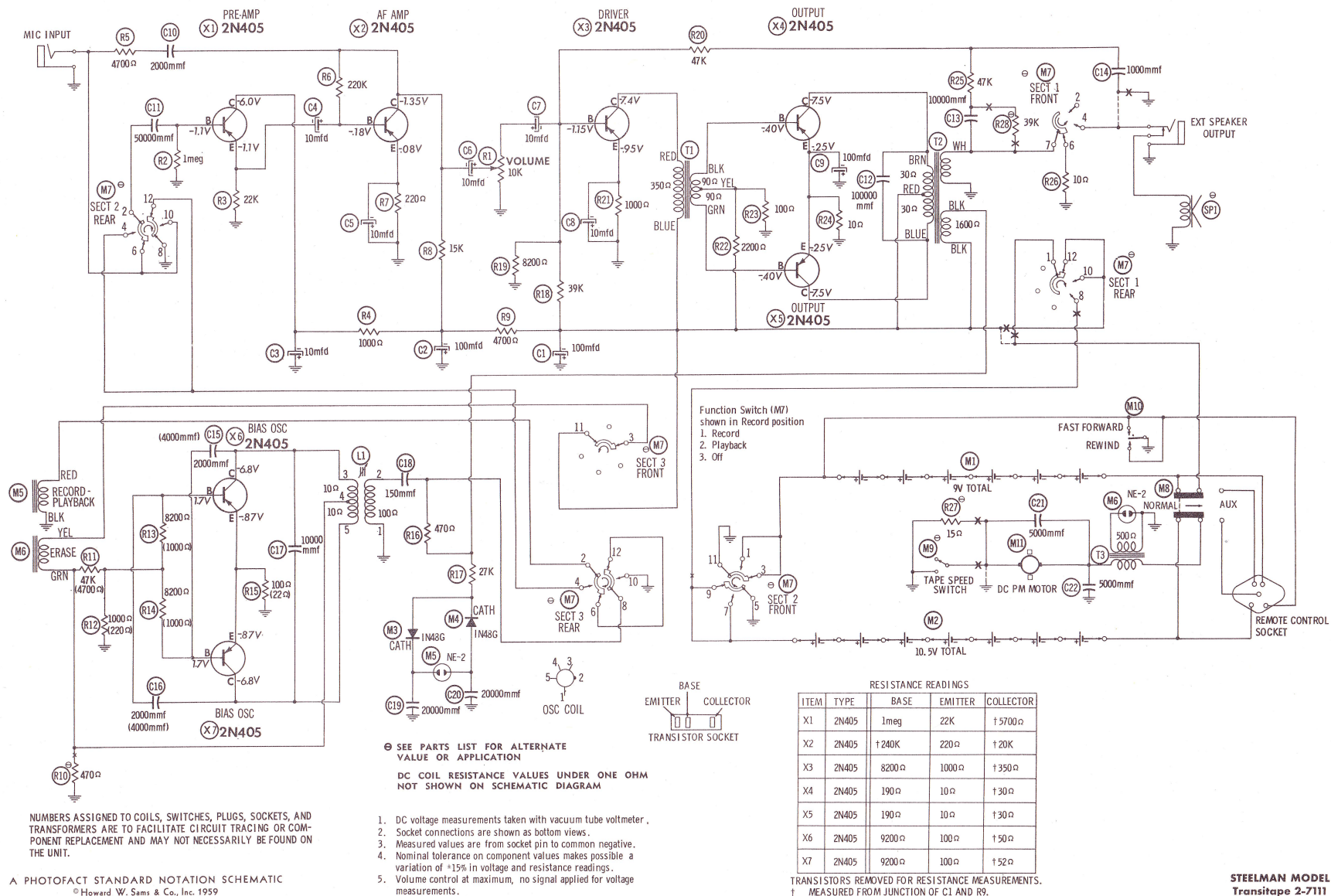
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
Power Cord	8524 (Stranded) Available in Ten Colors
Low-Loss Shielded Lead (Interconnecting)	1765-B (6 Ft. Length)
Phono Pick-up Arm Cable	1725-K (7½ Ft. Length)
	Use BELDEN No. 8401
	Use BELDEN No. 8430 (Two Conductor - Twisted)



AC POWER SCHEMATIC

A PHOTOFAC STANDARD NOTATION SCHEMATIC
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Figure 8. Schematic of Amplifier.



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Transtape 2-7111

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MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	678033	Spindle Spring (2 required)
2	761053	Spindle (2 required)
3	260080	Front Cover (gold for brown case)
	260101	Front Cover (silver for black case)
4	630894N	#6-1/4 Self-Tap Oval Head, Nickel Plated Screw (5 required)
5	761088	Pressure Arm
6	630921N	Allen Head Set Screw
7		Waldes Ring Washer (2 required)
8	260081	Top Cover (gold for brown case)
	260102	Top Cover (silver for black case)
9A	678046	Pressure Pad Spring Assembly
9B	761099	Pressure Arm Shield Spring
9C	990038	Pressure Pad (2 required)
10	630951N	2/ 56 x 1/ 8 Slotted B. H. Cadmium Plated Screw
11	761089	Pressure Pad Adjuster Arm
12	665022	Spindle Lock Ring (2 required)
13	693099	Washer (2 required)
14	761041	Base Casting
14A	700057	Spindle Bearing (2 required)
14B	700059	Tightener Pulley Stud
14C	700061	Casting Stud
14D	700045	Jewel Bearing, Fixed
15	761098	Pressure Arm Shield
16	630911N	2/ 56 x 7/ 16 Slotted B. H. Cadmium Plated Screw
17	678044	Head Mount Spring
18	630851	Guide Screw, 4/ 40 x 5/ 8 P. B. H. Cadmium Plated
19	630901N	2/ 56 x 1/ 4 Slotted B. H. Screw
20	700065	Tape Guide (2 required)
21	761090	Head Mounting Bracket
22	324507	Magnetic Erase Head
23	761091	Head Shield
24	324506	Magnetic Record Head
25	700067	Pressure Roller Shaft
26	700047	Pressure Roller
27	678036	Shaft Retainer
28	700049	On-Off Switch Cam
29		Waldes Lock Ring
30	700068	Pressure Release Rod
31	678037	Pressure Arm Spring
32	678038	Pressure Release Spring
33	693000	Pressure Rod Washer (2 required)
34	630901N	2/ 56 x 1/ 4 Slotted B. H. Cadmium Plated Screw
35	761075	Slide Bar
36	700063	Rewind Shaft
37	700054	Rewind Pulley
38	700055	Spindle Shaft A
39	761072	Drive Brake (2 required)
40	930025	Brake Lining (3 required)
41		Washer
42	699118	Hubbard Bowed Washer (2 required)
43	665028	United Carr Fastener, (2 required)
44	930023	Rewind Belt
45	700060	Casting Stud
46	761032	Flyback Brake
47	761151	Belt Retainer
48		Waldes Ring (2 required)
49	700074	Brake Spacer (2 required)
50	665028	United Carr Fastener (2 required)
51		Washer
52	700064	Rewind Idler Pulley
53	761069	Rewind Yoke
54	700072	Rewind Pulley Shaft
55	678041	Rewind Yoke Spring
56	700056	Spindle Shaft

Ref. No.	Part No.	Description
57	700053	Takeup Pulley
58	700066	Tightener Pulley (2 required)
59	693019	Tightener Arm Washer (3 required)
60		Waldes Grip Ring (2 required)
61	693369	Washer (2 required)
62	678034	Detent Spring
63	700050	Capstan Shaft
64	700051	Flywheel Pulley
65	700052	Flywheel
66	660911	Flywheel Lock Nut
67	761068	Bearing Support
68	630871N	#6-3/16 Hex Head Self-Tap Screw (3 required)
69	700046	Jewel Bearing, Adjustable
70	660911	Bearing Lock Nut
71	700069	Idler Roller Shaft
72	761071	Drive Idler Yoke
73	700048	Idler Roller
74	700073	Record Pushbutton, Nickel Plated (for black case)
	700078	Record Pushbutton, Brass Plated (for brown case)
75	678039	Slide Bracket Spring
76	311183	Motor, General Industries
76A	311184	Motor, Barber-Coleman
77	693170	Washer, Flat (6 required)
78	347014	Rubber Grommet (3 required)
79	700062	Speed Change Shaft
80	761078	Speed Change Arm
81	630861N	8/ 32 x 1/ 8 P. B. H. M. S. Cadmium Plated Screws for General Industries
		Motor (2 required) Screws for Barber-Coleman Motor (2 required)
82	761081	Motor Bracket (fits only G.I. Motor)
	761161	Motor Bracket, Universal
83	678040	Speed Change Arm Spring
84		Washer (2 required)
85	761079	Record Pushbutton Arm
86	678043	Pushbutton Spring
87	678035	Cam Spring
88	630871N	#6-3/ 16 Hex Head Self-Tap Screw
89	761070	Speed Change Slide Bracket
90	700071	Slide Bracket Shaft
91	761082	Actuator Arm
92	678042	Spring Belt
93	761176	Spring Belt Tightener Arm
93A	700058	Tightener Arm Stud
94	630871N	#6-3/ 16 Hex Head Self-Tap Screw
95	761033	Rewind Switch Contact
96	750027	Rewind Switch Insulated Block
97	680011	Switch Rivet
98	920030	Overload Indicator Bulb Retainer
99	730109	Magnetic Head Socket (2 required)
100	477414	5/ 16" General Purpose Plastic Tubing #14
101	617111N	6/ 32 x 1/ 4 P. B. H. M. S. Screw (3 required)
102		Motor Bracket Adjusting Screw
103	272298	Take-up-Rewind Knob, Brass (for brown case) (2 required)
	272320	Take-up-Rewind Knob, Nickel (for black case) (2 required)
	678045	Flat Retainer Spring for Knobs
	760947	Battery Clip (26 required)
	760047	Battery Tie Bar (10 required)
	672003	Battery Lug (6 required)
	750028*	Control Switch Insulating Block
	761093*	Switch, Outside Contact
	761094*	Switch, Inside Contact

MECHANICAL PARTS LIST (Cont.)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	680111*	Switch Rivet (2 required)		260092	Speaker Shield
	761134	Control Support Bracket		920094	Amplifier Cover
	920101	Battery Insulator		830143	Microphone Assembly
	920100	Switch Insulator (fishpaper)			
	761060	Side Cover			
	930026	Foam Rubber Cradle for Mike			

* May be omitted.

STEELMAN MODEL
Transitape 2-7111

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